

In the Claims:

Claims 1 to 51 (canceled).

1 52. (currently amended) A gas sensor for sensing a gas or gas
2 composition at high temperatures, said gas sensor
3 comprising a substrate (1) having a sensor carrier section
4 with a tip (10) and a conductor carrier section (9)
5 connected to said sensor carrier section opposite said tip
6 (10), said sensor carrier section having zones with varying
7 heat dissipations, a gas sensor function layer (4)
8 supported by said sensor carrier section of said substrate
9 (1) next to said tip (10), an electrical heater (6)
10 supported by said sensor carrier section in a position for
11 heating said gas sensor function layer (4), electric power
12 supply conductors (2) supported on said conductor carrier
13 section (9) of said substrate (1) and electrically
14 connected to said electrical heater (6), said electrical
15 heater (6) comprising heater sections having different
16 heating resistance values which depend on a spacing between
17 any particular heater section and said tip (10) of said
18 sensor carrier section, said different heating resistance
19 values generating varying amounts of heat for compensating
20 said varying heat dissipations, said gas sensor further
21 comprising at least one temperature sensing conductor path
22 (12) electrically connected to said electrical heater (6)
23 at least at one contact point, wherein said at least one
24 contact point between said electrical heater (6) and said

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25 at least one temperature sensing conductor path (12) is
26 positioned on said sensor carrier section for measuring an
27 operating temperature of said sensor carrier section to
28 provide a closed loop control signal for said electrical
29 heater to maintain said operating temperature at a minimal
30 temperature gradient throughout said gas sensor function
31 layer, wherein said electrical heater (6) comprises two
32 meandering heater paths (6A, 6B) and an intermediate
33 non-meandering heater portion (6C) positioned next to said
34 tip (10), said intermediate non-meandering heater portion
35 (6C) electrically connecting said two meandering heater
36 paths (6A, 6B) in series with each other, said meandering
37 heater paths (6A, 6B) having amplitudes forming said heater
38 sections, and wherein said amplitudes except a first
39 largest amplitude of said meandering heater paths are
40 diminishing in their size relative to and ~~[[form]]~~ from
41 said first largest amplitude toward said tip (10) depending
42 on said spacing between any particular heater section
43 formed by a respective amplitude and said tip (10).

1 53. (previously presented) The gas sensor of claim 52, wherein
2 said two meandering heater paths (6A, 6B) of said
3 electrical heater (6) comprise a heater path width (b)
4 along said heater sections, said path width (b) varying
5 depending on said spacing between any particular heater
6 section and said tip (10).

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1 54. (previously presented) The gas sensor of claim 52, wherein
2 said gas sensor function layer (4) has a length (L) between
3 said conductor carrier section and said tip (10) and
4 wherein said at least one contact point is located along
5 said length (L) of said gas sensor function layer (4) and
6 below said gas sensor function layer (4).

1 55. (previously presented) The gas sensor of claim 52,
2 comprising two temperature sensing conductor paths (12A,
3 12B) and at least two contact points (12A' and 12B')
4 between said two temperature sensing conductor paths (12A,
5 12B) and said electrical heater (6) for selecting a
6 different resistance value from at least two different
7 resistance values of said electrical heater (6).

1 56. (previously presented) The gas sensor of claim 52, wherein
2 said gas sensor function layer (4) is secured to one
3 surface of said sensor carrier section of said substrate
4 (1), and wherein said electrical heater (6) is attached to
5 an opposite surface of said sensor carrier section of said
6 substrate (1) in said position for heating said gas sensor
7 function layer (4).

Claims 57 to 60 (canceled).

1 61. (previously presented) A gas sensor for sensing a gas or
2 gas composition at high temperatures, said gas sensor
3 comprising a substrate (1) having a sensor carrier section

4 with a tip (10) and a conductor carrier section (9)
5 connected to said sensor carrier section opposite said tip
6 (10), said sensor carrier section having zones with varying
7 heat dissipations, a gas sensor function layer (4)
8 supported by said sensor carrier section of said substrate
9 (1) next to said tip (10), an electrical heater (6)
10 supported by said sensor carrier section in a position for
11 heating said gas sensor function layer (4), electric power
12 supply conductors (2) supported on said conductor carrier
13 section (9) of said substrate (1) and electrically
14 connected to said electrical heater (6), said electrical
15 heater (6) comprising heater sections having different
16 heating resistance values which depend on a spacing between
17 any particular heater section and said tip (10) of said
18 sensor carrier section, said different heating resistance
19 values generating varying amounts of heat for compensating
20 said varying heat dissipations, said gas sensor further
21 comprising two temperature sensing conductor paths (12A,
22 12B) electrically connected to said electrical heater (6)
23 at two respective contact points, positioned on said sensor
24 carrier section for measuring an operating temperature of
25 said sensor carrier section to provide a closed loop
26 control signal for said electrical heater to maintain said
27 operating temperature at a minimal temperature gradient
28 throughout said gas sensor function layer, and wherein said
29 electrical heater (6) comprises an intermediate
30 non-meandering heater portion (6C) and at least two
31 meandering heater paths (6A, 6B) electrically connected in
32 series with each other by said intermediate non-meandering

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33 heater portion (6C) to form an electrical heater series
34 connection, wherein said two respective temperature sensing
35 conductor paths (12A, 12B) are connected to said electrical
36 heater series connection at said two respective contact
37 points, (12A', 12B'), and wherein said two contact points
38 (12A', 12B') are spaced from each other along said
39 electrical heater series connection at a predetermined
40 spacing between said two contact points.

1 62. (previously presented) The gas sensor of claim 61, wherein
2 said gas sensor function layer (4) is secured to one
3 surface of said sensor carrier section of said substrate
4 (1), and wherein said electrical heater (6) is attached to
5 an opposite surface of said same sensor carrier section of
6 said substrate (1) in said position for heating said gas
7 sensor function layer (4).

1 63. (currently amended) The gas sensor of claim ~~61, wherein~~
2 61, wherein said electrical heater (6) comprises a heater
3 path having a path width (b) along said heater sections,
4 said path width (b) varying depending on said spacing
5 between any particular heater section and said tip (10).

1 64. (previously presented) The gas sensor of claim 61, wherein
2 said gas sensor function layer (4) has a length (L) between
3 said conductor carrier section and said tip (10) and
4 wherein at least one contact point of said two contact
5 points is located along said length (L) of said gas sensor

6 function layer (4) and below said gas sensor function layer
7 (4).

1 65. (previously presented) A gas sensor for sensing a gas or a
2 gas composition at high temperatures, said gas sensor
3 comprising a substrate (1) including a sensor carrier
4 section with a tip (10) and a gas sensor function layer (4)
5 supported by said sensor carrier section, an electrical
6 heater (6) supported by said sensor carrier section, said
7 electrical heater comprising at least one meandering heater
8 path including amplitudes forming heater sections, wherein
9 a first heater section has the largest amplitude and each
10 heater section has a different heating resistance value
11 which depends on a spacing between said tip (10) and a
12 respective heater section of said heater sections, and
13 wherein a second and further amplitudes of said amplitudes
14 forming said heater sections diminish toward said tip (10)
15 relative to said largest amplitude of said first heater
16 section for maintaining an operating temperature of said
17 sensor carrier section at a minimal temperature gradient
18 throughout said gas sensor function layer (4).

1 66. (previously presented) The gas sensor of claim 65, further
2 comprising at least one temperature sensing conductor path
3 (12) electrically connected to said electrical heater (6)
4 for measuring said operating temperature to provide a
5 control signal for controlling said operating temperature.

1 67. (previously presented) The gas sensor of claim 65, wherein
2 said gas sensor function layer (4) is secured to one
3 surface of said sensor carrier section of said substrate
4 (1), and wherein said electrical heater (6) is attached to
5 an opposite surface of said sensor carrier section of said
6 substrate (1) in said position for heating said gas sensor
7 function layer (4).

1 68. (previously presented) A gas sensor for sensing a gas or a
2 gas composition at high temperatures, said gas sensor
3 comprising a substrate (1) including a sensor carrier
4 section with a tip (10) and a gas sensor function layer (4)
5 supported by said sensor carrier section, an electrical
6 heater (6) supported by said sensor carrier section, said
7 electrical heater comprising at least one meandering heater
8 path including amplitudes forming heater sections, each
9 heater section having a different heating resistance value
10 which depends on a spacing between said tip (10) and a
11 respective heater section of said heater sections, wherein
12 said heater sections form at least two groups of heater
13 sections, and wherein second and further amplitudes of said
14 amplitudes forming each group of said heater sections
15 diminish toward said tip (10) relative to a largest
16 amplitude in each group of heater sections for maintaining
17 an operating temperature of said sensor carrier section at
18 a minimal temperature gradient throughout said gas sensor
19 function layer (4).

[RESPONSE CONTINUES ON NEXT PAGE]

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